

WHAT IS CLAIMED IS:

1. An automatic gain controller comprising:
 - a first variable gain amplifying means for amplifying an input signal;
 - 5 a filter for limiting a band of an output signal of the first variable gain amplifying means;
 - a second variable gain amplifying means for outputting an output signal of the filter to an exterior by amplifying the output signal of the filter;
 - 10 a first control signal generating means generating a first control signal for controlling a level of the output signal of the first variable gain amplifying means to a predetermined level;
 - a second control signal generating means generating a second control signal for controlling a level of an output signal of the second variable gain amplifying means to a predetermined level and outputting the second control signal to the second variable gain amplifying means; and
 - 15 a control signal selecting means selecting one of the first and second control signals generated from the first and second control signal generating means and outputting a selected control signal to the first variable gain amplifying means.
- 20 2. The automatic gain controller as claimed in claim 1, wherein the control signal selecting means compares the first control signal of the first control signal generating means with the second control signal of the second control signal generating means, and at the same time, selects one of the first and second control signals capable of lowering a gain of the first variable gain amplifying means, and outputs the selected signal to the first variable gain amplifying means.
- 25 3. The automatic gain controller as claimed in claim 2, further comprising a reference value varying means for varying a reference value, which is compared with a level of an input signal, depending on a status of quality information, when quality information of a received signal is obtained from a signal demodulation section connected to a rear end of the automatic gain controller and when the first

control signal generating means generates the first control signal based on a level of the input signal.

4. The automatic gain controller as claimed in claim 3, wherein the reference value varying means varies the reference value by comparing a level of the first control signal generated from the first control signal generating means with a level of the second control signal generated from the second control signal generating means, and by comparing a level of a received in-band signal with a predetermined value.

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5. The automatic gain controller as claimed in claim 4, further comprising a gain distribution adjusting means for adjusting a gain distribution in a front end circuit and a rear end circuit of the filter by comparing a level of an out-of-band signal of the filter with a level of an in-band signal of the filter.

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6. The automatic gain controller as claimed in claim 5, further comprising a signal strength calculating means, wherein, if the first control signal generated from the first control signal generating means is control voltage V3, and the second control signal generated from the second control signal generating means is control voltage V1, and at the same time, if an overall gain characteristic with respect to the control voltage V1 is $G(V1)$ and a gain characteristic of the front end circuit of the filter with respect to the control voltage V1 is $G3(V1)$, the signal strength calculating means determines the control voltage V1 as a strength of an in-band signal of the filter when the control voltage V3 is greater than the control voltage V1, and determines a calculating value V as the strength of the in-band signal of the filter when the control voltage V3 is less than the control voltage V1, wherein the calculating value V satisfies:

$$V = V1 + (G3(V1)/G(V1)) (V1-V3)$$

7. An automatic gain controller comprising:
30 a first variable gain amplifying means for amplifying an input signal;
a filter for limiting a band of an output signal of the first variable gain amplifying means;

5 a second variable gain amplifying means for amplifying an output signal of the filter;

 a third variable gain amplifying means for outputting the output signal of the filter by amplifying the output signal of the filter;

10 5 a first control signal generating means generating a first control signal for controlling a level of the output signal of the first variable gain amplifying means to a predetermined level;

 a second control signal generating means generating a second control signal for controlling a level of an output signal of the second variable gain amplifying means to a predetermined level and outputting the second control signal to the second variable gain amplifying means;

15 10 a third control signal generating means having a response characteristic faster than a response characteristic of the second control signal generating means, generating a third control signal for controlling a level of an output signal of the third variable gain amplifying means to a predetermined level, and outputting the third control signal to the third variable gain amplifying means; and

 15 a control signal selecting means selecting one of the first and second control signals generated from the first and second control signal generating means and outputting a selected control signal to the first variable gain amplifying means.

20 20 8. The automatic gain controller as claimed in claim 7, wherein each of the second and third control signal generating means includes a control information copying unit for copying control information of the second control signal generating means into the third control signal generating means, and the control information copying unit copies control information of the second control signal generating means into the third control signal generating means when the control signal selecting means selects the second control signal generated from the second signal generating means and outputs the second control signal to the first variable gain amplifying means.

25 25 9. The automatic gain controller as claimed in claim 8, wherein the control signal selecting means allows the control information copying unit to copy control information of the second control signal generating means into the third control

signal generating means, when a variation value of the first control signal generated from the first control signal generating means per a unit time is less than a predetermined value.

5 10. The automatic gain controller as claimed in claim 9, wherein the control signal selecting means compares the first control signal of the first control signal generating means with the second control signal of the second control signal generating means, and at the same time, selects one of the first and second control signals capable of lowering a gain of the first variable gain amplifying means, and
10 outputs the selected signal to the first variable gain amplifying means.

15 11. The automatic gain controller as claimed in claim 10, further comprising a reference value varying means for varying a reference value, which is compared with a level of an input signal, depending on a status of quality information, when quality information of a received signal is obtained from a signal demodulation section connected to a rear end of the automatic gain controller and when the first control signal generating means generates the first control signal based on a level of the input signal.

20 12. The automatic gain controller as claimed in claim 11, wherein the reference value varying means varies the reference value by comparing a level of the first control signal generated from the first control signal generating means with a level of the second control signal generated from the second control signal generating means, and by comparing a level of a received in-band signal with a predetermined
25 value.

30 13. The automatic gain controller as claimed in claim 12, further comprising a gain distribution adjusting means for adjusting a gain distribution in a front end circuit and a rear end circuit of the filter by comparing a level of an out-of-band signal of the filter with a level of an in-band signal of the filter.

14. The automatic gain controller as claimed in claim 13, further comprising a signal strength calculating means, wherein, if the first control signal generated from the first control signal generating means is control voltage V3, and the second control signal generated from the second control signal generating means is control voltage V1, and at the same time, if an overall gain characteristic with respect to the control voltage V1 is $G(V1)$ and a gain characteristic of the front end circuit of the filter with respect to the control voltage V1 is $G3(V1)$, the signal strength calculating means determines the control voltage V1 as a strength of an in-band signal of the filter when the control voltage V3 is greater than the control voltage V1, and determines a calculating value V as the strength of the in-band signal of the filter when the control voltage V3 is less than the control voltage V1, wherein the calculating value V satisfies:

$$V = V1 + (G3(V1)/G(V1)) (V1-V3)$$